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NEW HAMPSHIRE

AGRICULTURAL EXPERIMENT STATION

DEPARTMENT OF CHEMISTRY.

FERTILIZER ANALYSES

MADE IN COÖPERATION WITH THE STATE BOARD OF AGRICULTURE

1907

FRED W. MORSE and BERT E. CURRY.

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE AND THE MECHANIC ARTS

DURHAM, N. H.

TRADE VALUES OF FERTILIZING INGREDIENTS IN RAW MATERIALS AND CHEMICALS, 1907.

	Cents per pound.
Nitrogen in ammonia salts	17.5
" nitrates	18.5
" dry and fine ground fish, meat, and blood, and in high grade mixed fertilizers	20.5
" fine ground bone and tankage	20.5
" medium ground bone and tankage	15.
Phosphoric acid soluble in water	5.
" " " ammonium citrate (reverted)	4.5
" " in fine ground bone, fish and tankage	4.
" " in coarse bone and tankage	3.
" " in cotton-seed meal, castor-pomace, and wood ashes	4.
" " insoluble in mixed fertilizers	2.
Potash as sulphate free from chlorides and in wood ashes	5.
Potash as muriate	4.25

The above values are based on the wholesale market price for the materials, when sold in large lots at the principal trade centers in New England. The valuation of a ton of any mixed fertilizer based on the above figures will usually fall ten dollars below the retail price at the local agency. This variation includes such fixed charges as cost of mixing, bags, cartage, and freight, salaries and commissions of agents, and interest.

THE INSPECTION OF COMMERCIAL FERTILIZERS IN 1907.

During 1907, one hundred and six samples of fertilizers were collected by Mr. Charles B. Hoyt, agent of the State Board of Agriculture, and sent to the Agricultural Experiment Station for analysis. These samples represented ninety-four brands of mixed fertilizers and nine lots of chemicals.

Twenty brands were deficient in one or more constituents to an extent which would lower their value below that of the guarantee. These brands were distributed among nearly all the manufacturers represented in the trade and indicates that the goods are mixed with no margin for errors in weighing the different constituents, or are imperfectly mixed so that they are not correctly represented by a sample from a small lot.

The fertilizer trade in this state lasts but a few weeks in the early spring. It is nearly planting time before many agents receive their stock and they deliver as much as possible directly from the car to their patrons. The collector consequently finds it difficult to secure samples from more than a few sacks in the hands of the agents. Under such circumstances, the goods must be well mixed before they are put in bags, or samples will not agree with the printed statement of composition.

The variations appeared to be accidental rather than intentional; but it makes it worth while for the buyer of fertilizers to scan the bulletin each year and note whether his favorite brands are among those which show imperfections.

The purchase of fertilizers by the name of the brand is evident, both from the large number of brands of the same guaranteed composition and from a comparison of prices where these figures have been obtained.

For example, several brands of fertilizers guarantee nitrogen two per cent., available phosphoric acid, eight per

COMPOSITION OF COMMERCIAL FERTILIZERS SAMPLED AND ANALYZED IN 1907.

MANUFACTURER AND BRAND.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total.				Available.			Total.			
	Inorganic.	Organic.	Found.	Guaranteed.	Soluble.	Reverted.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
Abbott & Martin.													
Abbott's Tobacco and Potato Special	1.30	.....	1.32	1.65	2.45	4.20	6.65	8	1.90	8.55	10	3.45	4
Harvest King	.....	2.24	2.24	1.5	3.85	3.90	7.75	8	2.25	10.	.....	3.25	2
Hardy's Potato Grower	.....	.63	.63	1.5	5.10	2.10	7.20	8	1.85	9.05	10	10.38	10
American Agricultural Chemical Co.													
Bradley's Complete Fertilizer for Potatoes and Vegetables	.91	2.31	3.22	3.3	5.05	2.85	7.90	8	1.80	9.70	9	6.61	7
Bradley's Complete Manure for Top-Dressing Grass and Grain	5.05	.....	5.05	4.95	1.60	2.50	4.10	5	2.55	6.65	6	2.75	2.5
Bradley's Complete Manure with 10 per cent. Potash	1.45	1.53	2.98	3.3	4.35	2.45	6.80	6	1.30	8.10	7	10.66	10
Bradley's Corn Phosphate	.57	1.42	1.99	2.06	5.70	2.75	8.45	8	2.75	11.20	10	2.05	1.5
Bradley's Eclipse Phosphate	.....	1.26	1.26	1.03	4.95	3.35	8.30	8	2.50	10.80	10	2.49	2.
Bradley's Fertilizer for Grass and Lawn	3.80	.....	3.80	3.91	1.20	3.45	4.65	5	2.00	6.65	6	3.34	2.
Bradley's Potato Fertilizer	.64	1.52	2.16	2.06	5.95	2.10	8.05	8	2.50	10.55	10	2.94	3.
Bradley's Potato Manure	.86	1.58	2.44	2.5	5.65	1.40	7.05	6	1.95	9.00	8	4.78	5
Bradley's Seeding Down Manure	.85	1.64	2.49	2.5	7.00	2.80	9.80	9	2.80	12.60	11.	3.26	2
Bradley's XL Superphosphate	1.01	1.22	2.23	2.5	6.30	2.60	8.90	9	2.65	11.55	11	2.18	2
Clark's Cove Bay State Fertilizer	.27	1.99	2.26	2.06	7.45	1.45	8.90	8	3.00	11.90	10	1.71	1.5
Clark's Cove Potato Fertilizer	.24	1.89	2.13	2.06	8.05	1.50	9.55	8	2.30	11.85	10	3.37	3.
Cleveland Fertilizer for All Crops	.....	1.32	1.32	1.03	5.35	3.00	8.35	8	2.55	10.90	10	2.17	2.
Cleveland Potato Phosphate	1.06	1.05	2.11	2.06	5.20	3.10	8.30	8	2.25	10.55	10	3.38	3.
Complete Manure with 10 per cent. Potash	2.47	2.03	4.50	3.3	3.95	2.70	6.65	6.	1.95	8.60	7	8.24	10
Crocker's Grass and Oats Fertilizer	.....	.....	.....	.....	5.10	2.05	7.15	11	2.40	9.55	.....	1.52	2
Crocker's New Rural Ammoniated Superphosphate	.....	1.32	1.32	1.03	5.35	2.75	8.10	8	2.20	10.30	.....	1.95	2
Crocker's Potato, Hop and Tobacco	.66	1.50	2.16	2.06	4.70	3.40	8.10	8	2.25	10.35	.....	3.20	3
Crocker's Special Potato Manure	1.35	1.99	3.24	3.29	3.70	3.40	7.10	6	1.70	8.80	.....	8.97	10
Cumberland Guano for All Crops	.....	1.24	1.24	1.03	5.65	2.60	8.25	8	2.05	10.30	10	2.80	2
Cumberland Potato Fertilizer	.35	1.95	2.30	2.06	5.70	2.85	8.55	8	3.50	12.05	10	2.85	3

Darling's Dissolved Bone and Potash	1.75	.81	2.56	2.4	3.85	1.40	5.25	6	2.05	7.30	7	9.04	10
Darling's Farm Favorite	.77	1.38	2.15	2.06	5.25	3.75	9.00	8	2.55	11.55	10	3.15	3
Darling's General Fertilizer	.....	1.57	1.57	1.25	6.80	1.20	8.00	6	3.20	11.20	7	3.30	3
Darling's Potato Manure	1.27	1.22	2.49	2.5	5.30	2.80	8.10	6	2.70	10.80	8	4.76	5
Great Eastern General Fertilizer	.....	.94	.94	.82	4.40	3.85	8.25	8	3.55	11.80	.....	4.52	4
Great Eastern Northern Corn Special	.60	1.27	1.87	2.06	6.05	2.40	8.45	8	1.90	10.35	.....	1.76	1.5
Great Eastern Potato Manure	.92	1.31	2.23	2.06	5.85	4.51	10.36	8	2.44	12.80	.....	2.82	3
High Grade Fertilizer with 10 per cent. Potash	.70	2.00	2.70	2.4	4.25	3.15	7.40	6	1.35	8.75	7	9.74	10
Pacific Nobsque Guano	.....	1.25	1.25	1.03	3.70	4.20	7.90	8	3.10	11.00	10	2.36	2
Pacific Potato Special	.65	1.18	2.13	2.06	5.35	2.80	8.15	8	2.60	10.75	10	3.51	3
Packer's Union Animal Corn Fertilizer	.90	1.57	2.47	2.47	6.65	2.70	9.35	9	1.90	11.25	.....	2.50	2
Packer's Union Potato Manure	.95	1.65	2.60	2.06	4.55	2.75	7.30	8	2.05	9.35	.....	6.07	6
Packer's Union Universal Fertilizer	.....	1.10	1.10	.82	5.45	2.95	8.40	8	1.05	9.45	.....	4.10	4
Quinnipiac Corn Manure	32	1.90	2.22	2.06	7.40	2.15	9.55	8	2.20	11.75	10	1.69	1.5
Quinnipiac Dissolved Bone and Potash	.....	.....	.....	.....	6.85	4.60	11.45	10	1.60	13.05	11	1.91	2
Quinnipiac Potato Phosphate	.22	1.91	2.13	2.06	7.85	1.00	8.85	8	3.05	11.90	10	3.35	3
Read's Farmers' Friend	.57	1.48	2.05	2.06	6.45	2.50	8.95	8	1.80	10.75	10	2.79	3
Read's High Grade Farmers' Friend	1.93	1.27	3.20	3.30	5.15	.70	5.85	6	2.20	8.05	7	10.78	10
Read's Potato Manure	1.91	.45	2.36	2.40	5.95	.80	6.75	6	.75	7.50	7	9.88	10
Read's Practical Potato Special	.....	.84	.84	.82	3.30	1.75	5.05	4	1.20	6.25	5	7.82	8
Read's Standard Superphosphate	.....	.76	.76	.82	7.15	1.10	8.25	8	1.80	10.05	10	3.93	4
Soluble Pacific Guano	.53	1.52	2.05	2.06	6.40	2.50	8.90	8	1.95	10.85	10	2.19	1.
Williams & Clark's Americus Corn Phosphate	.62	1.68	2.30	2.06	5.90	2.50	8.40	8	2.70	11.10	10	1.92	1.5
Williams & Clark's Americus Potato Manure	.49	1.67	2.16	2.06	5.55	2.65	8.20	8	2.00	10.20	10	3.08	3
Muriate of Potash												55.5	50
Nitrate of Soda	.....	.....	15.72	1.5	.....	.....	.....	.....	.....	.....	.....	.....	...
Plain Superphosphate	.....	.....	.....	.....	10.60	4.10	14.70	14	.30	15.00	.....	.....	.....
Bowker Fertilizer Co.													
Bowker's Fresh Ground Bone	.....	.....	2.46	2.47	.....	.....	8.55	5	12.85	21.70	22.8	.....	.....
Bowker's Corn Phosphate	.55	1.26	1.81	1.65	6.95	1.20	8.15	8	3.20	11.35	9	2.21	2
Bowker's Early Potato Manure	.60	2.97	3.57	3.29	3.15	2.50	5.65	8	3.05	8.70	2	6.46	7
Bowker's Farm and Garden Phosphate	.58	1.71	2.29	1.65	4.85	2.95	7.80	8	2.35	10.15	9	1.95	2
Bowker's Hill and Drill Phosphate	.80	1.14	1.94	2.47	7.00	2.35	9.35	9	2.00	11.35	10	1.43	2
Bowker's Market Garden Fertilizer	1.16	1.11	2.27	2.47	5.15	1.70	6.85	6	1.20	8.05	7	10.48	10
Bowker's Potash or Staple Phosphate	.....	.96	.96	.82	5.60	2.25	7.85	8	1.05	8.90	9	3.31	3
Bowker's Potato and Vegetable Fertilizer	.51	1.79	2.30	2.47	5.55	2.25	7.80	8	2.30	10.10	9	4.26	4
Bowker's Potato and Vegetable Phosphate	.89	1.26	2.15	1.65	5.55	2.65	8.20	8	3.00	11.20	9	2.30	2
Bowker's Sure Crop Phosphate	.....	1.22	1.22	.82	5.90	2.25	8.15	8	2.60	10.75	9	1.89	2
Stockbridge Special Complete Manure for Corn, etc.	1.42	1.91	3.33	3.29	4.85	1.30	6.15	10	1.30	7.45	11	9.28	7
Stockbridge Special Complete Manure for Potatoes and Vege-	.74	2.60	3.34	3.29	3.65	1.75	5.40	6	1.55	6.95	7	10.47	10
Stockbridge Special Complete Manure for Seeding Down, etc.	1.28	1.16	2.44	2.47	2.60	2.75	5.35	6	2.05	7.40	9	11.42	10
Stockbridge Special Complete Manure for Top-Dressing, etc.	2.80	.21	3.01	4.93	5.25	.80	6.05	4	3.95	10.00	6	6.07	6

[tables]

COMPOSITION OF COMMERCIAL FERTILIZERS SAMPLED AND ANALYZED IN 1907.—*Concluded.*

MANUFACTURER AND BRAND.	Nitrogen.				Phosphoric Acid.							Potash.	
			Total.				Available.			Total.			
	Inorganic.	Organic.	Found.	Guaranteed.	Soluble.	Reverted.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
Coe-Mortimer Co.													
E. Frank Coe's Celebrated Special Potato Fertilizer	.83	1.03	1.86	1.65	7.95	1.40	9.35	8	1.55	10.70	10	3.27	4
E. Frank Coe's Columbian Corn and Potato Fertilizer	.....	1.29	1.29	1.23	6.05	2.40	8.45	8.5	1.30	9.75	10.5	2.25	2.5
E. Frank Coe's High Grade Ammonia Bone Superphosphate for All Crops	1.54	.51	2.05	1.85	2.30	2.70	5.00	9	1.80	6.80	11	3.22	2.25
E. Frank Coe's High Grade Dissolved Bone and Potash Brand	.....	.....	.....	.....	3.05	4.60	7.65	10.5	1.80	9.45	12	3.37	2
E. Frank Coe's High Grade Soluble Bone Brand	....	.....	1.25	.....	5.55	5.90	11.45	.....	1.60	13.05	.....	.63	.....
E. Frank Coe's New England Corn and Potato Fertilizer	.....	.70	.70	.8	3.65	2.50	6.15	7.5	1.90	8.05	9	3.20	3
E. Frank Coe's XXV Ammoniated Bone Phosphate	.....	.72	.72	.8	2.50	3.00	5.50	8.5	1.70	7.20	10	2.31	1.5
Fertilizer Products Co.													
Plant Blood	2.80	.57	3.37	4	1.55	7.55	9.10	4	1.15	10.25	6.5	3.83	4
Lister's Agricultural Chemical Works.													
Lister's Animal Bone and Potash	.....	.....	.....	.....	8.50	2.90	11.40	11	2.00	13.40	12	1.82	2
Lister's Oneida Special	.....	1.10	1.10	.83	4.35	4.05	8.40	7	1.00	9.40	8	1.84	1
Lister's Special Corn Fertilizer	.64	1.56	2.20	1.65	3.90	3.25	7.15	6	2.90	10.05	9	2.93	3
Lister's Special Potato Fertilizer	.22	1.56	1.78	1.65	5.75	2.60	8.35	8	3.65	12.00	9	3.39	3
Lister's Success	.....	1.54	1.54	1.24	6.85	3.35	10.20	9	4.00	14.20	11	2.11	2
Lowell Fertilizer Co.													
Swift's Lowell Animal Brand	.42	2.18	2.60	2.46	4.95	3.75	8.70	8	3.10	11.80	10	3.96	4
Swift's Lowell Bone Fertilizer	.23	1.57	1.80	1.64	6.00	2.15	8.15	8	3.50	11.65	9	3.44	3
Swift's Lowell Cereal Brand	.....	.88	.88	.82	4.50	2.50	7.00	7	2.20	9.20	8	1.18	1
Swift's Lowell Empress Brand	.....	.....	2.53	1.23	4.50	3.60	8.10	7	3.35	11.45	8	4.52	2
Swift's Lowell Potato Grower	1.04	1.87	2.91	.....	4.85	1.00	5.85	.....	0.90	6.75	.....	9.96	.....
Swift's Lowell Potato Manure	.24	1.73	1.97	1.64	5.50	2.95	8.45	7	1.50	9.95	8	3.91	4

Swift's Lowell Potato Phosphate	.22	2.20	2.42	2.46	4.55	4.00	8.55	8	3.85	12.40	9	7.1	6
Swift's Sterling Phosphate	.....	.89	.89	.82	5.95	2.20	8.15	8	1.75	9.90	9	4.08	4
Acid Phosphate	.....	.....	.....	.....	7.70	3.20	10.90	12	2.75	13.65	13	.....	.....
Muriate of Potash	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	52.60	50
Nitrate of Soda	.....	.....	15.20	15.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sulfate of Ammonia	.....	.....	20.2	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
NEW ENGLAND FERTILIZER CO.													
New England Corn Phosphate	.17	1.30	1.54	1.64	5.60	2.95	8.55	8	2.25	10.80	9	3.28	3
New England Potato Fertilizer	.17	1.49	1.66	1.64	4.80	2.45	7.25	7	1.85	9.10	8	3.98	4
PARMENTER & POLSEY FERTILIZER CO.													
Plymouth Rock	.40	2.59	2.99	2.46	5.20	3.90	9.10	8	1.90	11.00	9	3.95	4
Special Potato Fertilizer	1.62	1.66	3.28	3.28	6.10	1.80	7.95	8	1.40	9.35	9	6.52	7
Nitrate of Soda	.....	.....	15.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
RUSSIA CEMENT CO.													
Essex A1 Superphosphate	.....	.97	.97	1	1.70	4.30	6.00	7	5.45	11.45	9	2.38	2
Essex Complete Manure for Corn, Grain and Grass	.94	2.08	3.02	3.3	4.25	4.70	8.95	7	3.30	12.25	9.5	9.54	9.5
Essex Complete Manure for Potatoes, Roots and Vegetables	1.15	1.98	3.13	3.7	4.05	4.25	8.30	7	5.35	13.65	9	7.78	8.5
Essex Market Garden and Potato Manure	.74	1.58	2.32	2	3.30	5.60	8.90	8	4.25	13.15	10	5.35	5
Essex XXX Fish and Potash	.47	1.61	2.08	2.1	3.70	5.25	8.95	9	5.30	14.25	12	2.40	2 25
J. W. SANBORN.*													
Sanborn's Grass and Grain	2.26	42	2.68	5.33	1.20	4.98	6.18	6.0	1.72	7.90	8.0	6.42	6 5
Sanborn's Hill and Drill	.90	.83	1.73	2.80	2.90	4.39	7.29	7.0	1.16	8.75	10.	4.61	3.5
Sanborn's Special Potato and Corn	1.59	1.01	2.60	3.69	2.30	4.05	6.35	9.0	2.05	8.40	10.	3.31	8.

* Manufactured for J. W. Sanborn and sold to him under above guarantee by Buffalo Fertilizer Co., Buffalo, N. Y.

cent. and potash 1.5 per cent. Several other brands guarantee the same amounts of nitrogen and phosphoric acid, but increase the potash to three per cent. Both grades of fertilizer usually sell for $30 per ton, or $1.50 per hundred. One contains thirty pounds less potash per ton than the other, which at the trade value of potash amounts to $1.27.

It is also worth while to make use of the trade values and calculate the wholesale valuation of the fertilizers in which one is intersted. It will frequently be found that some of the lowest priced brands are the most expensive in proportion to the plant food provided.

A fertilizer selling for $28 per ton guarantees .8 per cent. nitrogen, 8 per cent. available phosphoric acid and 4 per cent. potash. Another brand selling for $37 guarantees 3.3 per cent. nitrogen, 8 per cent. available phosphoric acid and 7 per cent. potash. The lower priced goods gives a wholesale value of $15, while the higher priced brand shows a value of $28.20, or in the cheaper fertilizer $1.00 worth of fertility sells for $1.86, while in the costlier one it sells for only $1.31.

Another brand with an old established name sells at $35 per ton and costs $1.66 for every $1.00 of plant food contained in it.

The trade in fertilizer chemicals is not as extensive as it should be if the small number of samples is a fair basis for judgment. From prices secured of local agents, it was found that available phosphoric acid costs 6 cents per pound in acid phosphate, potash costs 4.5 cents per pound in muriate of potash, while nitrogen costs 18.5 cents in sulphate of ammonia and 19 cents in nitrate of soda.

Ground bone furnished nitrogen at 20 cents per pound and phosphoric acid at 5 cents. Since these prices were by the hundred pounds they were reasonably close to the trade values. At these prices, a ton of high grade fertilizer costing $37 could be bought for about $31 by purchasing chemicals.

639.73 N53 4
New Hampshire

639.73
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